Baiting and Trapping Orchard Pests

Stink bugs, those flying pecan orchard pests, are finicky eaters. And while they prefer to munch on the pecan variety Desirable more than Stuart, they will feed on many kinds of pecans. But no matter which nut this bug favors, farmers prefer to keep them grounded.

Entomologist Michael T. Smith, working closely with both the Jenkins and Horton orchards, has developed a strategy for keeping stink bugs out of the air. Formerly in ARS' Southern Insect Management Research Unit at Stoneville, Mississippi, Smith says pecan growers may control stink bugs entering pecan orchards—and even reduce their feeding damage to trees adjoining crops such as soybeans—by planting and spraying within a trap crop.

The bait: a strip planted along orchard borders of a favorite bug-munchie such as speckled purple hull pea, an edible delight to stink bugs. This pea variety produces pods continuously over the season.

"It's like building a moat around a castle," says Smith, who is now with ARS' Beneficial Insects Introduction Research Laboratory in Newark, Delaware. "The bugs stop at the trap crop to dine and don't make it to the farmer's money-making crop."

Stink bugs, the most damaging pests in Mississippi pecan orchards, take flight into the orchards before and during soybean harvest. But they continue to enter orchards from August through pecan harvest, which may extend into November and December.

Stink bug feeding causes two types of pecan damage: black pit and kernel spot.

When the bug pierces the nut with its needlelike nose before shell hardening, it spews a chemical on the kernel, causing it to turn black and cease development, resulting in black pit. If the pest feeds after shell hardening, the result is kernel spot. Here, stink bugs drill through the hardened shell, "spit" on the kernel to make it soft, and suck the meat out, leaving a black spot on the kernel.

Trap cropping could greatly reduce this pecan damage. It concentrates the bugs in an area outside the orchard, so farmers can control them economically with insecticides. This reduces broad insecticide spraying and increases grower profits.

Reduced pesticide spraying also means less impact on the environment and beneficial insects. Most insecticides used to control stink bugs also kill the beneficial insects that control crop-damaging aphids.

In a recent field study, Smith found feeding damage within the trap-crop-protected area was about 50 percent lower than in the unprotected area.—By **Tara Weaver,** ARS.

Michael T. Smith is at the USDA-ARS Beneficial Insects Introduction Research Laboratory, 501 South Chapel St., Newark, DE 19713; phone (302) 731-7330, ext. 41, fax (302) 737-6780, e-mail mtsmith@udel.edu. ◆

Storing Pecans Longer, Better

If you had pecan pie on your Thanksgiving menu, it could have been made with pecans that had been stored for about 10 to 12 months. And nuts stored that long can rapidly become stale unless kept frozen.

But ARS research horticulturists Elizabeth A. Baldwin and Bruce W. Wood have teamed up to extend the shelf life of pecans. Baldwin has developed an edible coating that keeps pecans stored for 10 months at room temperature from becoming rancid.

At the ARS Citrus and Subtropical Products Laboratory in Winter Haven, Florida, Baldwin used three different coatings made from cellulose that kept the nuts tasting good.

"Cellulose, the most abundant polysaccharide found in nature, is an all-natural product. It is commercially available and relatively inexpensive," she says. "It would be easy for a processor to spray these coatings on the nutmeats."

According to Baldwin, the experimental coatings are made from three types of cellulose: methyl, hydroxy propyl, and carboxy methyl. "Carboxy methyl cellulose (CMC) turned out to be the best preserver of flavor. It also gave the pecans a high gloss, improving their appearance.

"Although the CMC coating imparted a shine, the nuts didn't look or feel oily," says Baldwin. "And their color was not as dark as the control, or untreated, nuts. The color is a potentially important factor because consumers associate dark-colored pecans with rancidity, a condition when oxygen enters the nut and breaks down, or oxidizes, some of its fat."

The coatings, which are generally recognized as safe by the U.S. Food and Drug Administration, would need to be listed on the label as an ingredient.

Wood, who heads the ARS Southeastern Fruit and Tree Nut Research Laboratory in Byron, Georgia, collaborates with Baldwin on the project.

"The pecan industry is interested in further developing the coatings, which could promote year-round consumption," he says.—By **Doris Stanley**, ARS.

Elizabeth A. Baldwin is at the USDA-ARS Citrus and Subtropical Products Research Laboratory, P.O. Box 1909, Winter Haven, FL 33880; phone (941) 293-4133, ext 119, fax (941) 299-8678, e-mail ebaldwin@asrr.arsusda.gov.

Bruce W. Wood is at the USDA-ARS Southeastern Fruit and Tree Nut Research Laboratory, 21 Dunbar Rd., Byron, GA 31008; phone (912) 956-6421, fax (912) 956-2929, e-mail ao3bwood@attmail.com. ◆